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## REMARKS

Claims 17-34 are pending in the present application. Claims 18, 27, and 32-34 have been amended leaving Claims 17-34 for consideration upon entry of the present amendment. Reconsideration and allowance of the rejected claims is respectfully requested in view of the preceding amendment and the following remarks.

Information Disclosure Statement

An information disclosure statement (IDS) was faxed to the Patent and Trademark Office on August 13, 2003 referencing three U.S. design Patents (DES 246,296; DES 296,599; and DES 315,240) and two U.S. utility patents. The Examiner has stated on a PTO-1449 attached to the Office Action dated September 11, 2003 that no copies of the design patents were found. Attached hereto is a confirmation of the transmission of the faxed IDS. For the Examiner's convenience Applicants have attached duplicative copies hereto. As appropriate copies of the design patents were received at the Patent and Trademark Office on August 13, 2003 via facsimile, it is respectfully requested that the Examiner consider them and return a signed and initialed form PTO-1449 to the Applicants.

Objected to claims

Claims 18, 27, and 32-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 18, 27, and 32-34 have been rewritten accordingly. The Applicants respectfully request the Examiner to allow Claims 18, 27, and 32-34 as provided in rewritten form.

Claim Rejections Under 35 U.S.C. § 102(b or e)

Claims 17, 19-21, 23-26, and 28-30 stand rejected under 35 U.S.C. § 102(b) or (e), as allegedly anticipated by U.S. Patent No. 5,165,990 to Nakano et al. (Nakano) or U.S. Patent No. 6,383,046 to Campbell et al. (Campbell).

Independent Claims 17, 23, and 26 are directed to a plastic pallet comprising or consisting of a polyphenylene ether resin, a high impact polystyrene, at least one flame

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retardant in an amount sufficient to impart a degree of flame retardancy to the pallet to pass UL 2335 protocol for pallets and at least one impact modifier; wherein the pallet meets or exceeds Underwriters Laboratory UL 2335 protocol for pallets, or a method of making such a pallet.

Campbell generally discloses compositions comprising a thermoplastic resin and at least one phosphoramidate having a glass transition point of at least about 0° C, articles made from the compositions, and methods of making the composition.

Nakano generally describes a stampable sheet comprising a syndiotactic styrene polymer and fibrous filler.

To anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Varient Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987).

Applicants respectfully contend that both Campbell and Nakano fail to teach each and every element of independent Claims 17, 23, and 26. Both references fail to teach a pallet that meets or exceeds the Underwriters Laboratory UL 2335 protocol for pallets or, alternatively, fail to teach at least one flame retardant in an amount sufficient to impart a degree of flame retardancy to the pallet to pass UL 2335 protocol for pallets.

The Examiner has stated:

Applicants' contention, that the cited references fail to teach that the pallet made out of the compositions disclosed by the cited references passes the UL 2335 protocol, is noted. However, there has been no proof submitted that said compositions do not intrinsically possess the required fire resistance. Campbell et al. teach that their compositions have a rating of V-2 under the UL-94 protocol.

(Office Action dated September 11, 2003, page 2). The Applicants respectfully contend that the Examiner has failed to provide a prima facie case of inherency. The Federal Circuit explained the standard for determining inherency as follows:

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Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. If, however, the disclosure is sufficient to show that the natural result flowing from the operation as taught would result in the performance of the questioned function, it seems to be well settled that the disclosure should be regarded as sufficient.

(See *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1268-69, 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991) (quoting *In re Oelrich*, 666 F.2d 578, 581, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981)). To establish a *prima facie* case of inherency to support an anticipation rejection, an examiner must provide factual and technical grounds establishing that the inherent feature necessarily flows from the teachings of the prior art. (See *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int. 1990); see also *In re Oelrich*, 666 F.2d 578, 581, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981) (holding that inherency must flow as a necessary conclusion from the prior art, not simply a possible one)).

The Applicants respectfully contend that the Examiner has not established a *prima facie* case of anticipation by inherency based on the teachings of Campbell. As the Examiner has stated, Campbell teaches flame retardant compositions that possess a V-2 rating under UL-94 protocol. Such a rating was determined on a test specimen of about 0.125 inch by about 0.5 inch by about 5 inch dimensions. (Campbell, Examples and Claim 27). UL-94, The Standard for Flammability of Plastic Materials for Parts in Devices and Appliances provide six classifications (5VA, 5VB, V-0, V-1, V-2, HB) related to materials commonly used in manufacturing enclosures, structural parts and insulators found in consumer electronic products. (See the article at [www.ul.com/plastics/flame.html](http://www.ul.com/plastics/flame.html); a copy of the article is attached hereto). A V-2 rating corresponds to the test method performed with the test material oriented in a vertical position rather than a horizontal position. (Id.)

The UL 2335 protocol is to classify plastic pallets for fire hazards. Pallets are large structures used to hold many hundreds of pounds of material and are unlike enclosures, structural parts and insulators found in consumer electronic products. Furthermore, the UL 2335 protocol tests stacked pallets or alternatively a horizontal pallet with standard Class II commodities stored on it. (See Underwriters Laboratories article "Adding Fuel to the Fire? UL Classifies Plastic Pallets for Fire Hazard", [www.ul.com/auth/tca/v7n1/fuel.html](http://www.ul.com/auth/tca/v7n1/fuel.html); The

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Code Authority, Vol. 7, No. 1, 1998, article previously provided).

As there are significant differences between the UL-94 tests and the UL 2335 protocol, including the size of the structure tested, orientation of the test specimen, significance of the results for a particular application, etc., it does not necessarily follow that a material that receives a V-2 rating according to UL-94 would provide pallets that pass UL 2335. As such, sufficient factual and technical grounds have not been provided establishing that the alleged inherent feature, passing UL 2335, necessarily flows from the teachings of Campbell. To reiterate, inherency "may not be established by probabilities or possibilities". (See *Continental Can*) As a *prima facie* case of anticipation by inherency has not been established, independent Claims 17, 23, or 26 have not been rendered anticipated.

Accordingly, since both Campbell and Nakano fail to teach each and every element of independent Claims 17, 23, and 26 or their dependent claims, and a *prima facie* case of inherency has not been provided, the Applicants respectfully request reconsideration and removal of the 35 U.S.C. § 102(b) and (e) rejections of Claims 17, 19-21, 23-26, and 28-30.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 17, 19-26, and 28-31 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Nakano in view of U.S. Patent No. 3,405,666 to Miller, U.S. Patent No. 3,814,031 to Fowler (Fowler '031), U.S. Patent No. 3,951,078 to Fowler et al. (Fowler '078), U.S. Patent No. 4,007,694 to Fowler et al. (Fowler '694) or U.S. Patent No. 5,492,069 to Alexander et al. (Alexander).

Miller generally describes a pallet assembly. Miller fails to teach polyphenylene ethers or blends of polyphenylene ethers and it does not teach flame retardants.

Fowler ('078) generally describes a plastic pallet. Fowler ('694) generally describes a unitary plastic pallet. Fowler ('031) generally describes a plastic pallet. None of the Fowler references teach polyphenylene ethers or blends of polyphenylene ethers and none teach flame retardants.

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Alexander generally describes a polymer pallet assembly. Alexander does not teach polyphenylene ethers or blends of polyphenylene ethers and it does not teach flame retardants

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; or that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

Applicants respectfully argue that the combination of Nakano in view of Miller, Fowler '031, Fowler '078, Fowler '694, or Alexander fails to teach or suggest each and every element of independent Claims 17, 21, 23, or 26. None of the references teach or suggest a pallet that meets or exceeds the Underwriters Laboratory UL 2335 protocol for pallets or, alternatively, to teach at least one flame retardant in an amount sufficient to impart a degree of flame retardancy to the pallet to pass UL 2335 protocol for pallets, both elements required by the instant Claims. Accordingly, since the references fail to teach each and every element of the independent claims, the Applicants respectfully request reconsideration and removal of the 35 U.S.C. § 103(a) rejections of Claims 17, 19-26, and 28-31.

Furthermore, none of the references teach or disclose injection molding polyphenylene ether pallets as is required by Claims 23-25. Claim 23 reads:

A method for making a plastic pallet comprising: injection molding a composition comprising polyphenylene ether resin; a high impact polystyrene; at least one flame retardant in an amount necessary to impart a degree of flame retardancy to the pallet to pass the UL 2335 protocol for pallets; at least one impact modifier; wherein the pallet meets or exceeds Underwriters Laboratory UL 2335 protocol for pallets.

Nakano teaches stampable sheets that may be formed into pallets, but Nakano does not teach injection molding pallets. As none of the references teach or suggest the claim element of an injection molded pallet comprising polyphenylene ether resin, high impact polystyrene, at

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least one flame retardant in an amount necessary to impart a degree of flame retardancy to the pallet to pass the UL 2335 protocol for pallets, at least one impact modifier, wherein the pallet meets or exceeds Underwriters Laboratory UL 2335 protocol for pallets, Claims 23-25 have not been rendered obvious. Accordingly, the Applicants request reconsideration and removal of the § 103(a) rejections of Claims 23-25.

Based on the foregoing arguments, the Applicants respectfully request reconsideration and removal of the § 102(b and e) and § 103(a) rejections for Claims 17, 19-26, and 28-31.

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It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 07-0862 maintained by Assignee.

Respectfully submitted,

CANTOR COLBURN LLP

By:

Patricia S. DeSimone  
Patricia S. DeSimone  
Registration No. 48,137

Roberta L. Pelletier  
Registration No. 46,372

Date: November 11, 2003  
Customer No.: 23413  
Telephone: (860) 286-2929



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## UL 94 flammability testing

There are two types of pre-selection test programs conducted on plastic materials to measure flammability characteristics. The first determines the material's tendency either to extinguish or to spread the flame once the specimen has been ignited. The first program is described in UL 94, The Standard for Flammability of Plastic Materials for Parts in Devices and Appliances, which is now harmonized with IEC 60707, 60695-11-10 and 60695-11-20 and ISO 9772 and 9773.

The second test program measures the ignition resistance of the plastic to electrical ignition sources. The material's resistance to ignition and surface tracking characteristics is described in UL 746A, which is similar to the test procedures described in IEC 60112, 60695 and 60950.

### UL 94 flame classifications

There are 12 flame classifications specified in UL 94 that are assigned to materials based on the results of these small-scale flame tests. These classifications, listed below in descending order of flammability, are used to distinguish a material's burning characteristics after test specimens have been exposed to a specified test flame under controlled laboratory conditions.

- Six of the classifications relate to materials commonly used in manufacturing enclosures, structural parts and insulators found in consumer electronic products (5VA, 5VB, V-0, V-1, V-2, HB).
- Three of the remaining six classifications relate to low-density foam materials commonly used in fabricating speaker grills and sound-deadening material (HF-1, HF-2, HBF).
- The last three classifications are assigned to very thin films, generally not capable of supporting themselves in a horizontal position (VTM-0, VTM-1, VTM-2). These are usually assigned to substrates on flexible printed circuit boards.

### Horizontal versus vertical positioning

Specimens molded from the plastic material are oriented in either a horizontal or vertical position, depending on the specifications of the relevant test method, and

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are subjected to a defined flame ignition source for a specified period of time. In some tests, the test flame is only applied once, as is the case of the horizontal burning (HB) test, while in other tests the flame is applied twice or more.

A HB flame rating indicates that the material was tested in a horizontal position and found to burn at a rate less than a specified maximum.

The three vertical ratings, V2, V1 and V0 indicate that the material was tested in a vertical position and self-extinguished within a specified time after the ignition source was removed. The vertical ratings also indicate whether the test specimen dripped flaming particles that ignited a cotton indicator located below the sample. UL 94 also describes a method in which the test flame is applied for up to five applications, in testing for a 5VA or 5VB classification. These small-scale tests measure the propensity of a material to extinguish or spread flames once it becomes ignited.

#### **Difference in test methods and criteria**

When looking at the flame ratings for plastic materials commonly molded to fabricate enclosures, structural parts and insulators found in consumer electronic products (5VA, 5VB, V-0, V-1, V-2 and HB), a material classified as 5VA or 5VB is subjected to a flame ignition source that is approximately five times more severe than that used in the HB, V-0, V-1 and V-2 tests, and the specimens may not drip any flaming particles. The three remaining six classifications specified in UL 94 relate to low-density foam materials commonly used in fabricating speaker grills and sound-deadening material (HF-1, HF-2, HBF). The remaining three classifications are assigned to very thin films, generally not capable of supporting themselves in a horizontal position (VTM-0, VTM-1, VTM-2).

## **UL 746A ignition tests**

In addition to flammability considerations, a material's ability to resist ignition from electrical sources is another important factor that must be considered in the selection and evaluation of a material for use in electrical equipment. Possible electrical ignition sources in equipment are: overloaded (overheated) electrical conductors and components; arcing parts, such as the open contacts of switches and relays; and arcing at broken or loose connections, e.g., splices or terminals. Polymeric materials in direct contact with or in close proximity to overloaded or arcing electrical parts could ignite.

The three basic tests used to evaluate a material's ability to resist ignition are the Hot-Wire Ignition (HWI) High-Current (or High-Amp) Arc Ignition (HAI); and High-Voltage Arc Tracking Rate (HVTR). Details of the test criteria can be found in UL 746A, The Standard for Polymeric Materials - Short-Term Evaluations. The **Recognized Component Directory** tabulates the results of the small-scale tests conducted on the materials.

The HWI test indicates a material's resistance to ignition when exposed to abnormally high temperatures resulting from a component failure, such as a conductor carrying far more than its rated current. HWI performance is expressed as the mean number of seconds required to ignite a specimen when wrapped with an energized ni-chrome resistive wire that dissipates a specified level of energy.

The HAI test determines the material's ability to withstand electrical arcing either directly on or just above the surface of the plastic material. This can occur in the presence of open switch contacts or in the event of the failure of an electrical connection. HAI performance is expressed as the number of arc rupture exposures -- using standardized electrode materials, geometry and electrical supply circuit -- required to ignite a specimen when the arc occurs directly on the surface or a specified distance above the test specimen.

The HVTR for a material is expressed as the rate (in inches per minute) that a tracking path can be produced on the surface of the material under standardized test conditions. This test relates to establishment of an electrically conductive path on the surface of a solid, insulated material as a result of electrical stress.

Another ignition test can be applied to measure a material's resistance to ignition property. This test is the Glow-Wire Ignitability Test and is also described in UL 746A and 746C, Polymeric Materials - Use in Electrical Equipment Evaluations. The method is based on a test procedure that is documented in IEC 60695 and specified in numerous IEC end-product specifications, including IEC 60335-1. The test is somewhat similar to the HWI test in that it measures a material's resistance to ignition on application of a heated non-flaming source.

#### Resources for more information

Other resources for UL 94 and flammability testing include:

- **Scope of UL 94**
- **Flammability Training Video**
- Contact person:  
Dan O'Shea  
E-mail: [Daniel.W.OShea@us.ul.com](mailto:Daniel.W.OShea@us.ul.com)

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